

REMARKS

Claims 1 through 16 are now presented for examination. Claims 1 and 15 are the only independent claims. Claim 13 has been amended to improve its form. Claim 16 is newly presented. Support for Claim 16 may be found, for example, on page 26, lines 11-13 of the substitute specification.

Claims 1-10 and 13-15 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent Application Publication No. 2003/0064206 (Koyano et al.). Claim 11 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Koyano et al. in view of JP 2000-136336 (Tanimoto et al.). Claim 12 was rejected under 35 U.S.C. § 103(a) as allegedly being obvious over Koyano et al. in view of JP 07-034008 (Mihoya et al.). These rejections are respectfully traversed.

Independent Claim 1 is directed to an ink set having a coloring material in a state dissolved or dispersed in an aqueous medium and a water-based reactive liquid containing a first component for insolubilizing or aggregating the coloring material in the ink by mixing with the water-based ink. The water-based reactive liquid contains a water-soluble high-molecular compound in a dissolved state and the water-based ink contains a second component, which is not insolubilized by the first component and the coloring material in a dissolved state. The water-soluble high-molecular compound is not insolubilized by the first component and the coloring material but is insolubilized by the second component.

Independent Claim 15 is directed to a water-based ink suitable for use in conducting ink-jet recording on a recording medium to which a water-based reactive liquid

containing a water-soluble high-molecular compound and a first component for insolubilizing or aggregating a coloring material has been applied. The ink contains the coloring material in a state dissolved or dispersed in an aqueous medium and has a second component for insolublilizing the water-soluble high-molecular compound.

Accordingly, in the present invention as recited in independent Claims 1 and 15, the ink contains a coloring material and a second component capable of insolubilizing a water-soluble high-molecular compound contained in the reactive liquid, while the reactive liquid contains the water-soluble high-molecular compound and a first component capable of insolubilizing the coloring material contained in the ink. Thus, with the present invention, two reactions can occur. The first reaction is between the coloring material in the ink and the first component in the reactive liquid, and the second reaction is between the water-soluble high-molecular compound in the reactive liquid and the second component in the ink.

Koyano et al. discloses an image recording method including applying a pretreatment liquid on a surface of a recording material and discharging a recording ink according to image signals to form an ink image on the pretreatment liquid on the surface of the recording material before the pretreatment liquid applied to the recording material has dried. The recording ink includes a solvent and a component dispersed or dissolved in the solvent. The pretreatment liquid includes a compound depressing at least one of the dispersibility and solubility of the component in the recording ink in an amount of 10 to 80% by weight based on total weight. Thus, Koyano et al. discloses a reaction between a component in the recording ink and a compound in the pretreatment liquid.

Koyano et al., however, does not teach or suggest a reaction corresponding to the second reaction (the reaction between the water-soluble high-molecular compound in the reactive liquid and the second component in the ink). Though the Examiner refers to the description in paragraph [0206] of Koyano et al., that paragraph only discloses a variety of antioxidants. Even though hydrazone compounds are mentioned therein, there exist a large number of hydrazone compounds including ones reactive with high-molecular compounds and ones not reactive with high-molecular compounds. Further, whether a certain hydrazone compound is reactive or not reactive will depend on the structure of the target high-molecular compound. Accordingly, Applicants' submit that Koyano et al. does not teach or suggest an ink containing a coloring material and a second component and a reactive liquid containing a water-soluble high-molecular compound and a first component, wherein the second component is capable of insolubilizing the water-soluble high-molecular compound and the first component is capable of insolubilizing the coloring material.

Tanimoto et al. was cited for teaching that the water-based composition has a vinyl alcohol polymer that has an acetoacetyl group. Mihoya et al. was cited for teaching that the water-based coating composition includes adipic dihydrazide. None of the references, however, remedy the deficiencies of Koyano et al., and the proposed combinations of Koyano et al. and Tanimoto et al., and Koyano et al. and Mihoya et al., even if proper, still fail to teach or suggest Applicants' claimed invention.

Thus, independent Claims 1 and 15 are patentable over the cited art.

Reconsideration and withdrawal of the §§ 102 and 103 rejections are respectfully requested.

For the foregoing reasons, Applicants respectfully submit that the present invention is patentably defined by independent Claims 1 and 15. Dependent Claims 2-14 and 16 are also allowable, in their own right, for defining features of the present invention in addition to those recited in their respective independent claims. Individual consideration of the dependent claims is requested.

Applicants submit that the present application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action, and an early Notice of Allowability are requested.

Applicants' undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,



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